



# Cisco Unified Communications Manager Express SCCP Integration Guide for Cisco Unity Connection Release 14

Cisco Unified Communications Manager Express SCCP Integration Guide for Cisco Unity Connection Release 14	2
Introduction	2
Integration Tasks	2
Requirements	3
Integration Description	4
Planning the Usage of Voice Messaging Ports in Unity Connection	5
Programming the Cisco Unified Communications Manager Express Phone System	8
Creating a New Integration with Cisco Unified CM Express	28
Testing the Integration	39
Adding New User Templates for Multiple Integrations	42

Revised: March 19, 2021,

# Cisco Unified Communications Manager Express SCCP Integration Guide for Cisco Unity Connection Release 14

## Introduction

This document provides instructions for setting up a Cisco Unified Communications Manager Express Skinny Call Control Protocol (SCCP) integration with Cisco Unity Connection.

This document does not apply to the configuration in which Unity Connection is installed as Cisco Business Edition—on the same server with Cisco Unified Communications Manager.

Unity Connection can integrate with Cisco Unified CM Express in SRST mode. For details, see the Integrating Cisco Unity Connection with Cisco Unified CME-as-SRST application note at

[http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_installation_and_configuration_guides_list.html).

## Integration Tasks

Before doing the following tasks to integrate Unity Connection with Cisco Unified Communications Manager Express by SCCP, confirm that Cisco Unity Connection is ready for the integration by completing the applicable tasks in the “[Installing Cisco Unity Connection](#)” chapter of the *Install, Upgrade and Maintenance Guide for Cisco Unity Connection, Release 14*, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/install\\_upgrade/guide/b\\_14cuciumg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/install_upgrade/guide/b_14cuciumg.html).

The following task list describes the process for creating the integration.

## Task List to Create the Integration

Use the following task list to set up a Cisco Unified CM Express SCCP integration.

1. Review the system and equipment requirements to confirm that all phone system and Unity Connection server requirements have been met. See the [Requirements](#).
2. Plan how the voice messaging ports are used by Unity Connection. See the [Planning the Usage of Voice Messaging Ports in Unity Connection](#).
3. Program Cisco Unified Communications Manager Express. See the [Programming the Cisco Unified Communications Manager Express Phone System](#).
4. Create the integration. See the [Creating a New Integration with Cisco Unified CM Express](#).
5. Test the integration. See the [Testing the Integration](#).
6. If this integration is a second or subsequent integration, add the applicable new user templates for the new phone system. See the [Adding New User Templates for Multiple Integrations](#).



---

**Note** While integrating the Cisco Unity Connection with Cisco Unified Call Manager through a SCCP uncheck the Synchronize guest time to host option for Unified Communications product line in Virtualized environment. This enables the Unified Communications to synchronize with their clock to external NTP servers.

---

# Requirements

The Cisco Unified CM Express SCCP integration supports configurations of the following components:

## Phone System

- A compatible version of Cisco Unified CM Express.

For details on compatible versions of Cisco Unified CM Express, see the Compatibility Matrix for Cisco Unity Connection at [http://www.cisco.com/en/US/products/ps6509/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/ps6509/products_device_support_tables_list.html).

- The following phones or combinations of phones for the Cisco Unified CM Express extensions:
  - Only SCCP phones.
  - Both SCCP phones and SIP phones.

For a list of supported Cisco IP phone models, see the applicable compatibility information document at [http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_device_support_tables_list.html).

- A compatible Cisco IOS software version. See the *Cisco Unified CME and Cisco IOS Software Version Compatibility Matrix* at [http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_device_support_tables_list.html).
- Cisco Unified CM Express feature license.
- Cisco IP phone feature licenses, and Cisco licenses for other H.323-compliant devices or software (such as Cisco Virtual phone and Microsoft NetMeeting clients) that are connected to the network, as well as one license for each Unity Connection port.
- Analog phones connected to ATA. (For integration limitations with these phones, see the [Integration Description](#).)
- A LAN Unity Connection in each location where you plug the applicable phone into the network.

## Unity Connection Server

- The applicable version of Unity Connection. For details on compatible versions of Unity Connection, see the *Compatibility Matrix for Cisco Unity Connection* at [http://www.cisco.com/en/US/products/ps6509/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/ps6509/products_device_support_tables_list.html).
- Unity Connection installed and ready for the integration, as described in the “[Installing Cisco Unity Connection](#)” chapter of the *Install, Upgrade and Maintenance Guide for Cisco Unity Connection, Release 14*, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/install\\_upgrade/guide/b\\_14cuciumg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/install_upgrade/guide/b_14cuciumg.html).
- A license that enables the applicable number of voice messaging ports.

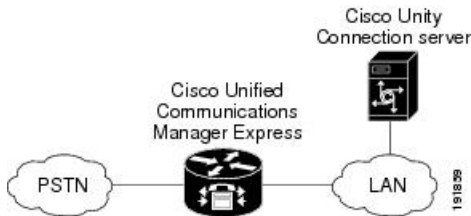
## Centralized Voice Messaging

Unity Connection supports centralized voice messaging through the phone system, which supports various inter-phone system networking protocols including proprietary protocols such as Avaya DCS, Nortel MCDN, or Siemens CorNet, and standards-based protocols such as QSIG or DPNSS. Note that centralized voice messaging is a function of the phone system and its inter-phone system networking, not voicemail. Unity Connection supports centralized voice messaging as long as the phone system and its inter-phone system networking are properly configured. For details, see the “[Centralized Voice Messaging](#)” section in the “Integrating Cisco Unity Connection with the Phone System” chapter of the *Design Guide for Cisco Unity Connection, Release 14* at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/design/guide/b\\_14cucdg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/design/guide/b_14cucdg.html).

## Integration Description

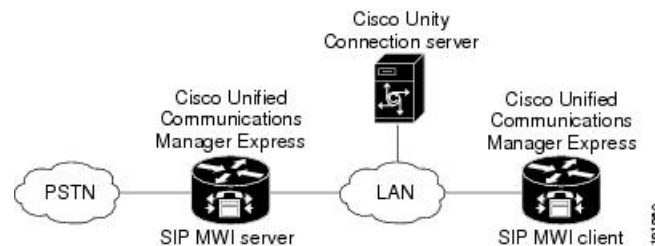
The Cisco Unified Communications Manager (CM) Express SCCP integration uses a LAN to connect Unity Connection and the phone system. The Cisco Unified Communications Manager Express router also provides connections to the PSTN. [Figure 1: Figure 1 Connections between a Single Cisco Unified Communications Manager Express Router and Unity Connection](#) shows the connections for a system with a single Cisco Unified CM Express router.

**Figure 1: Figure 1 Connections between a Single Cisco Unified Communications Manager Express Router and Unity Connection**



[Figure 2: Figure 2 Connections between Multiple Cisco Unified Communications Manager Express Routers and a Single Unity Connection Server](#) shows the connections for a system with multiple Cisco Unified CM Express router and a single Unity Connection server. One Cisco Unified CM Express router acts as the SIP MWI server, and the remaining Cisco Unified CM Express routers act as SIP MWI clients. Note that Cisco Unity Connection voice messaging ports register with only the SIP MWI server (the Cisco Unified CM Express router that is on the same LAN as the Unity Connection server), not with the SIP MWI clients.

**Figure 2: Figure 2 Connections between Multiple Cisco Unified Communications Manager Express Routers and a Single Unity Connection Server**



For a list of supported versions of Cisco Unified CM Express that are qualified to integrate with Unity Connection by Skinny Call Control Protocol (SCCP), see the *Compatibility Matrix for Cisco Unity Connection* at [http://www.cisco.com/en/US/products/ps6509/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/ps6509/products_device_support_tables_list.html).

This document does not apply to the configuration in which Unity Connection is installed as Cisco Business Edition—on the same server with Cisco Unified CM.

## Call Information

The phone system sends the following information with forwarded calls:

- The extension of the called party
- The extension of the calling party (for internal calls) or the phone number of the calling party (if it is an external call and the system uses caller ID)
- The reason for the forward (the extension is busy, does not answer, or is set to forward all calls)

Unity Connection uses this information to answer the call appropriately. For example, a call forwarded to Unity Connection is answered with the personal greeting of the user. If the phone system routes the call to Unity Connection without this information, Unity Connection answers with the opening greeting.

## Integration Functionality

The Cisco Unified CM Express SCCP integration with Cisco Unity Connection provides the following features:

- Call forward to personal greeting
- Call forward to busy greeting
- Caller ID
- Easy message access (a user can retrieve messages without entering an ID; Unity Connection identifies a user based on the extension from which the call originated; a password may be required)
- Identified user messaging (Unity Connection automatically identifies a user who leaves a message during a forwarded internal call, based on the extension from which the call originated)
- Message waiting indication (MWI)

These integration features are not available to analog phones connected through FXS ports on the Cisco Unified CM Express phone system. Analog phones connected to ATA, however, support all integration features, except MWIs (MWI lamps do not light, though the stutter dial tone sounds).

## Integrations with Multiple Phone Systems

When Unity Connection is installed as Cisco Business Edition—on the same server with Cisco Unified Communications Manager—Unity Connection cannot be integrated with multiple phone systems at one time.

When Unity Connection is not installed as Cisco Business Edition, Unity Connection can be integrated with two or more phone systems at one time. For information on and instructions for integrating Cisco Unity Connection with multiple phone systems, see the *Multiple Phone System Integration Guide for Cisco Unity Connection Release 14* at

[https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/integration/multiple/b\\_cuc14intmultiple.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/integration/multiple/b_cuc14intmultiple.html).

## Planning the Usage of Voice Messaging Ports in Unity Connection

Before programming the phone system, you need to plan how the voice messaging ports are used by Unity Connection. The following considerations affect the programming for the phone system (for example, setting up the hunt group or call forwarding for the voice messaging ports):

- The number of voice messaging ports installed.  
For a Unity Connection cluster, each Unity Connection server must have enough ports to handle all voice messaging traffic in case the other server stops functioning. The Cisco Unified CM Express server must have enough ports created for all Unity Connection servers.
- The number of voice messaging ports that answer calls.
- The number of voice messaging ports that only dial out, for example, to send message notification, to set message waiting indicators (MWIs), and to make telephone record and playback (TRAP) connections.

The following table describes the voice messaging port settings in Unity Connection that can be set on Telephony Integrations > Port of Cisco Unity Connection Administration.

**Table 1: Settings for the Voice Messaging Ports**

Field	Considerations
Enabled	<p>Check this check box to enable the port. The port is enabled during normal operation.</p> <p>Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.</p>
Server	<p><i>(For a Unity Connection cluster only)</i> Select the name of the Unity Connection server that you want to handle this port.</p> <p>Assign an equal number of answering and dial-out voice messaging ports to the Unity Connection servers so that they equally share the voice messaging traffic.</p>
Extension	Enter the extension for the port as assigned on the phone system.
Answer Calls	Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.
Perform Message Notification	Check this check box to designate the port for notifying users of messages. <b>Assign Perform Message Notification</b> to the least busy ports.
Send MWI Requests	Check this check box to designate the port for turning MWIs on and off. Assign <b>Send MWI Requests</b> to the least busy ports.
Allow TRAP Connections	Check this check box so that users can use the port for recording and playback through the phone in Unity Connection web applications. Assign <b>Allow TRAP Connections</b> to the least busy ports.
Outgoing Hunt Order	Enter the priority order in which Unity Connection uses the ports when dialing out (for example, if the <b>Perform Message Notification</b> , <b>Send MWI Requests</b> , or <b>Allow TRAP Connections</b> check box is checked). The highest numbers are used first. However, when multiple ports have the same <b>Outgoing Hunt Order</b> number, Unity Connection uses the port that has been idle the longest.

## Determining the Number of Voice Messaging Ports to Install

The number of voice messaging ports to install depends on numerous factors, including:

- The number of calls Unity Connection answers when call traffic is at its peak.
- The expected length of each message that callers record and that users listen to.
- The number of users.
- The number of ports that are set to dial out only.
- The number of calls made for message notification.

- The number of MWIs that are activated when call traffic is at its peak.
- The number of TRAP connections needed when call traffic is at its peak. (TRAP connections are used by Unity Connection web applications to play back and record over the phone.)
- The number of calls that use the automated attendant and call handlers when call traffic is at its peak.
- Whether a Unity Connection cluster is configured. For considerations, see the [Considerations for a Unity Connection Cluster](#).

It is best to install only the number of voice messaging ports that are needed so that system resources are not allocated to unused ports.

## Determining the Number of Voice Messaging Ports to Answer Calls

The calls that the voice messaging ports answer can be incoming calls from unidentified callers or from users. Typically, the voice messaging ports that answer calls are the busiest.

You can set voice messaging ports to both answer calls and to dial out (for example, to send message notifications). However, when the voice messaging ports perform more than one function and are very active (for example, answering many calls), the other functions may be delayed until the voice messaging port is free (for example, message notifications cannot be sent until there are fewer calls to answer). For best performance, dedicate certain voice messaging ports for only answering incoming calls, and dedicate other ports for only dialing out. Separating these port functions eliminates the possibility of a collision, in which an incoming call arrives on a port at the same time that Unity Connection takes the port off-hook to dial out.

If your system is configured for a Unity Connection cluster, see the [Considerations for a Unity Connection Cluster](#).

## Determining the Number of Voice Messaging Ports to Dial Out

Ports that only dial out and not answer calls can do one or more of the following:

- Notify users by phone, pager, or email of messages that have arrived.
- Turn MWIs on and off for user extensions.
- Make a TRAP connection so that users can use the phone as a recording and playback device in Unity Connection web applications.

Typically, these voice messaging ports are the least busy ports.

If your system is configured for a Unity Connection cluster, see the [Determining the Number of Voice Messaging Ports to Dial Out](#).




---

**Caution** In programming the phone system, do not send calls to voice messaging ports in Unity Connection that cannot answer calls (voice messaging ports that are not set to **Answer Calls**). For example, if a voice messaging port is set only to **Send MWI Requests**, do not send calls to it.

---

## Considerations for a Unity Connection Cluster

If your system is configured for a Unity Connection cluster, consider how the voice messaging ports are used in different scenarios.

### When Both Unity Connection Servers are Functioning

- The phone system is provisioned with twice the number SCCP ephone devices needed to handle the voice messaging traffic.
- A hunt group is configured on the phone system to send incoming calls first to the subscriber server, then to the publisher server if no answering ports are available on the subscriber server.

- Both Unity Connection servers are active and handle voice messaging traffic for the system.
  - In Cisco Unity Connection Administration, the voice messaging ports that connect to the SCCP ephone devices are configured so that an equal number of voice messaging ports are assigned to each Unity Connection server. This guide directs you to assign the voice messaging ports to their specific server at the applicable time.
  - The voice messaging ports on both Unity Connection servers are registered with the phone system.
  - The number of voice messaging ports that are assigned to one Unity Connection server must be sufficient to handle all of the voice messaging traffic for the system (answering calls and dialing out) when the other Unity Connection server stops functioning.
- If both Unity Connection servers must be functioning to handle the voice messaging traffic, the system do not have sufficient capacity when one of the servers stops functioning.

- Each Unity Connection server is assigned half the total number of voice messaging ports.

If all the voice messaging ports are assigned to one Unity Connection server, the other Unity Connection server cannot answer calls or to dial out.

- Each Unity Connection server must have voice messaging ports that answer calls and can dial out (for example, to set MWIs).

### When Only One Unity Connection Server is Functioning

- The SCCP ephone devices on the phone system are unregistered from the voice messaging ports on the Unity Connection server that stopped functioning.
- The hunt group on the phone system sends all calls to the functioning Unity Connection server.
- The functioning Unity Connection server receives all voice messaging traffic for the system.
- The number of voice messaging ports that are assigned to the functioning Unity Connection server must be sufficient to handle all of the voice messaging traffic for the system (answering calls and dialing out).
- The functioning Unity Connection server must have voice messaging ports that answer calls and can dial out (for example, to set MWIs).

If the functioning Unity Connection server does not have voice messaging ports for answering calls, the system cannot answer incoming calls. Similarly, if the functioning Unity Connection server does not have voice messaging ports for dialing out, the system cannot dial out (for example, to set MWIs).

## Programming the Cisco Unified Communications Manager Express Phone System

After the Cisco Unified Communications Manager Express router is installed, do the procedures in the applicable section depending on the Unity Connection configuration or on the number of Cisco Unified CM Express routers that you integrate with Unity Connection:

- Unity Connection without a cluster—see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with Unity Connection \(without a Cluster\)](#).
- Unity Connection with a cluster configured—see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with a Unity Connection Cluster](#).
- Multiple Cisco Unified Communications Manager Express routers—see the [Programming Multiple Cisco Unified Communications Manager Express Routers to Integrate with Unity Connection](#).



## Programming a Cisco Unified Communications Manager Express Router to Integrate with Unity Connection (without a Cluster)

This procedure configures the Message button on Cisco IP phones to dial the Unity Connection pilot number when pressed.



---

**Note** Do the procedures in this section only if you are integrating a single Cisco Unified CM Express router with Unity Connection server (without a Unity Connection cluster). If Cisco Unity Connection is configured for a Unity Connection cluster, see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with a Unity Connection Cluster](#). If you are integrating multiple Cisco Unified CM Express routers, see the [Programming Multiple Cisco Unified Communications Manager Express Routers to Integrate with Unity Connection](#).

---

### Configuring the Message Button Access to Unity Connection (without a Cluster)

#### Procedure

---

- Step 1** On the Cisco Unified CM Express router, go into the telephony-service configuration mode by entering the following command:
- telephony-service**
- Step 2** Enter the following command:
- voicemail <Cisco Unity Connection pilot number>**
- Step 3** To exit the telephony-service configuration mode, enter the following command:
- exit**
- 

#### Example

The following is an example of the configuration:

```
telephony-service
voicemail 4001
```

### Configuring the Router for Unity Connection (without a Cluster)

#### Procedure

---

- Step 1** Go into the ephone-dn configuration mode and configure the directory number tag for the Cisco IP phone lines by entering the applicable command:
- For ephone-dns that are used by ports that are dedicated for leaving and retrieving voice messages, enter the following command:  
**ephone-dn <DN tag> dual-line**
  - For ephone-dns that are used only to dial out, enter the following command:

## **ephone-dn <DN tag>**

**Step 2** To set the extension number for the voice messaging port, enter the following command:

**number <Voice messaging port extension>**

**Note** The voice message port extension must be the Unity Connection pilot number (configured by the “voicemail” command in the preceding procedure) for all ports dedicated for leaving and retrieving voice messages.

**Step 3** To set the display name for the port (for example, “Voice Messaging System” or “Dial Out Only”), enter the following command:

**name <Display name of voice messaging port>**

**Step 4** To set the device name for the port (for example, “CUC1-VI1” or “CUC1-Dialout1”), enter the following command:

**description <Device name of voice messaging port>**

**Step 5** To reserve the second ephone-dn channel for supervised transfers, enter the following command:

**huntstop channel**

**Step 6** To set the dial-peer preference for the extension, enter the following command:

**preference <Preference order>**

**Step 7** Enter the applicable command:

- To disable huntstop, enter the following command:

**no huntstop**

- To enable huntstop, enter the following command:

**huntstop**

**Step 8** Repeat [Step 1](#) through [Step 7](#) for all remaining ports.

**Note** The number of voice messaging ports set up to connect to Unity Connection must be the same as the number of directory number tags for the Cisco IP phone lines set up by the ephone-dn configuration mode.

**Step 9** To exit the ephone-dn configuration mode, enter the following command:

**exit**

---

## **Example**

The following is an example of the configuration without a Unity Connection cluster:

```
ephone-dn 32 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI1"
huntstop channel
no huntstop
preference 1
!
ephone-dn 33 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI2"
```

```

huntstop channel
no huntstop
preference 2
!
ephone-dn 34 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI3"
huntstop channel
huntstop
preference 3
!
ephone-dn 35
number 5001
name "Dial Out Only"
description "CUC1-Dialout1"

```

In this example, there are four ephone-dns configured to provide four voice messaging ports. Three of the ephone-dns are configured with the same extension number to provide ports dedicated for leaving and retrieving voice messages. These three ephone-dns are also configured with two channels each (the second channel is reserved for supervised transfers). The fourth ephone-dn is provided for use as a dial-out port. The first three ephone-dns are configured with the same extension number (4001), using preferences 1, 2, and 3 to create a hunt group. If the first port is busy, the call goes to the second port, and so on. Port 4 is configured with the extension number 5001 and is used to dial out by Unity Connection (for example, to set MWIs). Separate ports are required for answering calls and dialing out in order to prevent call-collision problems between incoming calls placed by Cisco Unified CM Express to Unity Connection, and outgoing calls that Unity Connection places in the opposite direction.

### Associating the Voice Messaging Port (Without a Unity Connection Cluster)

To associate the actual voice messaging port (vm-device-id) to the phone number, associate the Cisco IP phone with the voice messaging port.

The vm-device-id name uses the following format:

<Unity Connection device name prefix><Port number>

The vm-device-id name must match the Unity Connection voice messaging port name that you use to identify the port in Cisco Unity Connection Administration when you create the integration:

- The Unity Connection device name prefix part (for example, CUC1-VI) must match the **Device Name Prefix** field on the Telephony Integrations > Port Group > Port Group Basics page of Cisco Unity Connection Administration.
- The port number part (for example, "1") must match the number part of the Cisco Unity Connection Administration voice messaging port name used to identify the port on the Telephony Integrations > Port > Port Basics page of Cisco Unity Connection Administration.

### Associating a Voicemail Port to Cisco Unified CM Express Router

#### Procedure

---

- Step 1** Go into the ephone configuration mode and register the Cisco IP phones by entering the following command:  
**ephone <DN tag>**
- Step 2** Define the voice messaging port name, by entering the following command:  
**vm-device-id <Cisco Unity Connection device name prefix><Port number>**

For example, if the Unity Connection device name prefix is CUC1-VI, enter CUC1-VI1 for the first port, CUC1-VI2 for the second port, and so on.

**Caution** The vm-device-id name used by Cisco Unified CM Express must be the same as the voice messaging port name used by Unity Connection. Otherwise, the integration do not work.

**Step 3** Assign buttons to the Cisco IP phone directory numbers created in the [Configuring the Router for Unity Connection \(without a Cluster\)](#), by entering the following command:

**button <Button number>:<DN tag>**

For example, you can use the values 1:1, 2:4, or 3:14. In this example, button 1 corresponds to directory number 1 (ephone-dn 1), button 2 corresponds to directory number 4, and button 3 corresponds to directory number 14. The buttons correspond to the phone lines on the Cisco IP phone.

**Step 4** Repeat [Step 1](#) through [Step 3](#) for all remaining voice messaging port names.

**Note** The number of voice messaging port names configured with the vm-device-id command must be the same as the number of Cisco IP phones registered by the ephone configuration mode.

**Step 5** To exit the ephone configuration mode, enter the following command:

**exit**

---

## Example

Following is an example of the configuration without a Cisco Unity Connection cluster. In this example, the vm-device-id command is used within the ephone configuration in place of the mac-address parameter that is used for configuring a regular Cisco IP phone.

```
ephone 5
vm-device-id CUC1-VI1
button 1:32
!
ephone 6
vm-device-id CUC1-VI2
button 1:33
!
ephone 7
vm-device-id CUC1-VI3
button 1:34
!
ephone 8
vm-device-id CUC1-VI4
button 1:35
```

## Configuring a Directory Number for MWI Notification (Without a Unity Connection Cluster)

MWI configuration on the Cisco Unified CM Express is performed by dedicating Cisco IP phone directory numbers (ephone-DNs) to process MWI status notification calls originating from Unity Connection. You must allocate a minimum of one MWI processing ephone-dn for each MWI ephone-dn voice messaging port. The MWI processing ephone-dn extensions are configured to match the MWI extensions configured on Unity Connection.

## Procedure

---

**Step 1** Go into the ephone-dn configuration mode and configure the directory numbers for the Cisco IP phone lines by entering the following command:

**ephone-dn <DN tag>**

**Step 2** Configure two valid directory numbers for the Cisco IP phone to be used for MWIs—the first number turns MWIs on, and the second number turns MWIs off—by entering the following command:

**number <MWI on number> secondary <MWI off number>**

**Note** The MWI on and off numbers must match the settings of the **MWI On Extension** and **MWI Off Extension** fields you enter in Cisco Unity Connection Administration when you create the integration on Unity Connection.

**Step 3** Configure these two directory numbers to be used for setting MWIs by entering the following command:

**mwi on-off**

**Step 4** To exit the ephone-dn configuration mode, enter the following command:

**exit**

---

## Example

Following is an example of the configuration.

```
ephone-dn 32
number 8000 secondary 8001
mwi on-off
```

In this example, Unity Connection calls extensions 8000 and 8001 to turn MWIs on and off. The DN triggers an MWI ON event when 8000 is called, and an MWI OFF event when 8001 is called.

For extensions associated with analog telephone adaptors (ATAs), the MWI is a lit function button on the ATA and a stutter dial tone on the connected analog phone.



---

**Note** After completing the procedures in this section, continue to the [Creating a New Integration with Cisco Unified CM Express](#).

---

## Programming a Cisco Unified Communications Manager Express Router to Integrate with a Unity Connection Cluster

This procedure configures the Message button on Cisco IP phones to dial the Unity Connection pilot number when pressed.



---

**Note** Do the procedures in this section only if you are integrating a single Cisco Unified CM Express router with Unity Connection with a Unity Connection cluster configured. If Unity Connection is not configured for a Unity Connection cluster, see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with Unity Connection \(without a Cluster\)](#). If you are integrating multiple Cisco Unified CM Express routers, see the [Programming Multiple Cisco Unified Communications Manager Express Routers to Integrate with Unity Connection](#).

---

## Configuring the Message Button Access to a Unity Connection Cluster

### Procedure

---

**Step 1** On the Cisco Unified CM Express router, go into the telephony-service configuration mode by entering the following command:

**telephony-service**

**Step 2** Enter the following command:

**voicemail <Cisco Unity Connection pilot number>**

**Step 3** To exit the telephony-service configuration mode, enter the following command:

**exit**

---

### Example

The following is an example of the configuration:

```
telephony-service
voicemail 4001
```

## Configuring the Router for a Unity Connection Cluster

### Procedure

---

**Step 1** Go into the ephone-dn configuration mode and configure the directory number tag for the Cisco IP phone lines by entering the applicable command:

- For ephone-dns that are used by ports that are dedicated for leaving and retrieving voice messages, enter the following command:

**ephone-dn <DN tag> dual-line**

- For ephone-dns that are used only to dial out, enter the following command:

**ephone-dn <DN tag>**

**Step 2** To set the extension number for the voice messaging port, enter the following command:

**number <Voice messaging port extension>**

**Note** The voice message port extension must be the Unity Connection pilot number (configured by the “voicemail” command in the preceding procedure) for all ports dedicated for leaving and retrieving voice messages.

**Step 3** To set the display name for the port (for example, “Voice Messaging System” or “Dial Out Only”), enter the following command:

**name <Display name of voice messaging port>**

- Step 4** To set the device name for the port (for example, “CUC1-VI1” or “CUC1-Dialout1”), enter the following command:  
**description <Device name of voice messaging port>**
- Step 5** To reserve the second ephone-dn channel for supervised transfers, enter the following command:  
**huntstop channel**
- Step 6** To set the dial-peer preference for the extension, enter the following command:  
**preference <Preference order>**
- Note** The preference order must route calls first to the subscriber server in the Unity Connection cluster, then to the publisher server. See the example configuration below.
- Step 7** Enter the applicable command:
- To disable huntstop, enter the following command:  
**no huntstop**
  - To enable huntstop, enter the following command:  
**huntstop**
- Step 8** Repeat [Step 1](#) through [Step 7](#) for all remaining ports.
- Note** The number of voice messaging ports set up to connect to Unity Connection must be the same as the number of directory number tags for the Cisco IP phone lines set up by the ephone-dn configuration mode. Further, the number of voice messaging ports must be the total of the ports on all Unity Connection servers in the Unity Connection cluster.
- Step 9** To exit the ephone-dn configuration mode, enter the following command:  
**exit**
- 

## Example

The following is an example of the configuration with a Unity Connection cluster configured:

```
ephone-dn 32 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI1"
huntstop channel
no huntstop
preference 4
!
ephone-dn 33 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI2"
huntstop channel
no huntstop
preference 5
!
ephone-dn 34 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI3"
```

```

huntstop channel
huntstop
preference 6
!
ephone-dn 35 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI1"
huntstop channel
no huntstop
preference 1
!
ephone-dn 36 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI2"
huntstop channel
no huntstop
preference 2
!
ephone-dn 37 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI3"
huntstop channel
no huntstop
preference 3
!
ephone-dn 38
number 5001
name "Dial Out Only"
description "CUC1-Dialout1"
!
ephone-dn 39
number 5001
name "Dial Out Only"
description "CUC2-Dialout1"

```

In this example, there are two sets of ephone-dns:

- Four ephone-dns are configured for the publisher server in the Unity Connection cluster (CUC1-VI1 through CUC1\_VI3, and CUC1-Dialout1).
- Four ephone-dns are configured for the subscriber server in the Unity Connection cluster (CUC2-VI1 through CUC2\_VI3, and CUC2-Dialout1).

The hunt group routes calls first to the subscriber server in the Unity Connection cluster. When all the answering ports on the subscriber server are busy, the hunt group routes calls to the publisher server. Only the last answering ephone-dn for the publisher server has enabled huntstop so that the hunt group searches through the answering ephone-dns on all Unity Connection servers. The ephone-dns that are used for dialing out are not included in the hunt group.

### **Associating the Voice Messaging Port (With a Unity Connection Cluster Configured)**

To associate the actual voice messaging port (vm-device-id) to the phone number, associate the Cisco IP phone with the voice messaging port.

The vm-device-id name uses the following format:

<Unity Connection device name prefix><Port number>



The vm-device-id name must match the Unity Connection voice messaging port name that you use to identify the port in Cisco Unity Connection Administration when you create the integration:

- The Unity Connection device name prefix part (for example, CUC1-VI) must match the **Device Name Prefix** field on the Telephony Integrations > Port Group > Port Group Basics page of Cisco Unity Connection Administration.
- The port number part (for example, “1”) must match the number part of the Cisco Unity Connection Administration voice messaging port name used to identify the port on the Telephony Integrations > Port > Port Basics page of Cisco Unity Connection Administration.

## Associating a Voice Messaging Port to Cisco Unified CM Express Router

### Procedure

---

**Step 1** Go into the ephone configuration mode and register the Cisco IP phones by entering the following command:

```
ephone <DN tag>
```

**Step 2** Define the voice messaging port name, by entering the following command:

```
vm-device-id <Cisco Unity Connection device name prefix><Port number>
```

For example, if the Cisco Unity Connection device name prefix is CUC1-VI, enter CUC1-VI1 for the first port, CUC1-VI2 for the second port, and so on.

**Caution** The vm-device-id name used by Cisco Unified CM Express must be the same as the voice messaging port name used by Unity Connection. Otherwise, the integration do not work.

**Step 3** Assign buttons to the Cisco IP phone directory numbers created in the “[Configuring the Router for a Unity Connection Cluster](#)” by entering the following command:

```
button <Button number>:<DN tag>
```

For example, you can use the values 1:1, 2:4, or 3:14. In this example, button 1 corresponds to directory number 1 (ephone-dn 1), button 2 corresponds to directory number 4, and button 3 corresponds to directory number 14. The buttons correspond to the phone lines on the Cisco IP phone.

**Step 4** Repeat [Step 1](#) through [Step 3](#) for all remaining voice messaging port names.

**Note** The number of voice messaging port names configured with the vm-device-id command must be the same as the number of Cisco IP phones registered by the ephone configuration mode.

**Step 5** To exit the ephone configuration mode, enter the following command:

```
exit
```

---

### Example

The following is an example of the configuration with a Unity Connection cluster. In this example, the vm-device-id command is used within the ephone configuration in place of the mac-address parameter that is used for configuring a regular Cisco IP phone.

```
ephone 5
vm-device-id CUC1-VI1
```

```

button 1:32
!
ephone 6
vm-device-id CUC1-VI2
button 1:33
!
ephone 7
vm-device-id CUC1-VI3
button 1:34
!
ephone 8
vm-device-id CUC1-VI4
button 1:38
!
ephone 9
vm-device-id CUC2-VI1
button 1:35
!
ephone 10
vm-device-id CUC2-VI2
button 1:36
!
ephone 11
vm-device-id CUC2-VI3
button 1:37
!
ephone 12
vm-device-id CUC2-VI4
button 1:39

```

## Configuring a Directory Number for MWI Notification (With a Unity Connection Cluster Configured)

MWI configuration on the Cisco Unified CM Express is performed by dedicating Cisco IP phone directory numbers (ephone-DNs) to process MWI status notification calls originating from Unity Connection. You must allocate a minimum of one MWI processing ephone-dn for each MWI ephone-dn voice messaging port. The MWI processing ephone-dn extensions are configured to match the MWI extensions configured on Unity Connection.

### Procedure

---

**Step 1** Go into the ephone-dn configuration mode and configure the directory numbers for the Cisco IP phone lines by entering the following command:

```
ephone-dn <DN tag>
```

**Step 2** Configure two valid directory numbers for the Cisco IP phone to be used for MWIs—the first number turns MWIs on, and the second number turns MWIs off—by entering the following command:

```
number <MWI on number> secondary <MWI off number>
```

**Note** The MWI on and off numbers must match the settings of the **MWI On Extension** and **MWI Off Extension** fields you enter in Cisco Unity Connection Administration when you create the integration on Unity Connection.

**Step 3** Configure these two directory numbers to be used for setting MWIs by entering the following command:

```
mwi on-off
```

**Step 4** To exit the ephone-dn configuration mode, enter the following command:

```
exit
```

---

## Example

Following is an example of the configuration.

```
ephone-dn 32
number 8000 secondary 8001
mwi on-off
```

In this example, Unity Connection calls extensions 8000 and 8001 to turn MWIs on and off. The DN triggers an MWI ON event when 8000 is called, and an MWI OFF event when 8001 is called.

For extensions associated with analog telephone adaptors (ATAs), the MWI is a lit function button on the ATA and a stutter dial tone on the connected analog phone.



---

**Note** After completing the procedures in this section, continue to the [Creating a New Integration with Cisco Unified CM Express](#).

---

## Programming Multiple Cisco Unified Communications Manager Express Routers to Integrate with Unity Connection

Unity Connection can be used by multiple Cisco Unified CM Express routers. This configuration requires that one Cisco Unified CM Express router be on the same LAN as Unity Connection, and this Cisco Unified CM Express router register all Cisco Unity Connection voice messaging ports. This Cisco Unified CM Express router (the SIP MWI server) is a proxy server that relays SIP MWI messages between Unity Connection and all other Cisco Unified CM Express routers (the SIP MWI clients). Note that Unity Connection voice messaging ports register with only the SIP MWI server (the Cisco Unified CM Express router that is on the same LAN as Unity Connection), not with the SIP MWI clients.



---

**Note** Do the procedures in this section only if you are integrating multiple Cisco Unified CM Express routers. If Unity Connection is not configured for a cluster, see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with Unity Connection \(without a Cluster\)](#). If a Unity Connection cluster is configured, see the [Programming a Cisco Unified Communications Manager Express Router to Integrate with a Unity Connection Cluster](#).

---

## Configuring the Message Button Access to Unity Connection (Multiple Cisco Unified CM Express Routers)

### Procedure

---

**Step 1** On the Cisco Unified CM Express router, go into the telephony-service configuration mode by entering the following command:

```
telephony-service
```

**Step 2** Enter the following command:

```
voicemail <Cisco Unity Connection pilot number>
```

**Step 3** To exit the telephony-service configuration mode, enter the following command:

**exit**

---

### Example

The following is an example of the configuration:

```
telephony-service
voicemail 4001
```

## Configuring the Router for Unity Connection (Multiple Cisco Unified CM Express Routers)

### Procedure

---

- Step 1** Go into the ephone-dn configuration mode and configure the directory number tag for the Cisco IP phone lines by entering the applicable command:
- For ephone-dns that are used by ports dedicated for leaving and retrieving voice messages, enter the following command:  
**ephone-dn <DN tag> dual-line**
  - For ephone-dns that are used only to dial out, enter the following command:  
**ephone-dn <DN tag>**
- Step 2** To set the extension number for the voice messaging port, enter the following command:  
**number <Voice messaging port extension>**
- Note** The voice message port extension must be the Unity Connection pilot number (configured by the “voicemail” command in the preceding procedure) for all ports dedicated for leaving and retrieving voice messages.
- Step 3** To set the display name for the port (for example, “Voice Messaging System” or “Dial Out Only”), enter the following command:  
**name <Display name of voice messaging port>**
- Step 4** To set the device name for the port (for example, “CUC1-VI1” or “CUC1-Dialout1”), enter the following command:  
**description <Device name of voice messaging port>**
- Step 5** To reserve the second ephone-dn channel for supervised transfers, enter the following command:  
**huntstop channel**
- Step 6** To set the dial-peer preference for the extension, enter the following command:  
**preference <Preference order>**
- Note** The preference order must route calls first to the subscriber server in the Unity Connection cluster, then to the publisher server. See the example configuration below.
- Step 7** Enter the applicable command:
- To disable huntstop, enter the following command:

**no huntstop**

- To enable huntstop, enter the following command:

**huntstop**

**Step 8** Repeat [Step 1](#) through [Step 7](#) for all remaining ports.

**Note** The number of voice messaging ports set up to connect to Unity Connection must be the same as the number of directory number tags for the Cisco IP phone lines set up by the ephone-dn configuration mode.

For a Unity Connection cluster, the number of voice messaging ports must be the total of the ports on all Unity Connection servers in the cluster.

**Step 9** To exit the ephone-dn configuration mode, enter the following command:

**exit**

---

## Example

The following is an example of the configuration without a Unity Connection cluster:

```
ephone-dn 32 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI1"
huntstop channel
no huntstop
preference 1
!
ephone-dn 33 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI2"
huntstop channel
no huntstop
preference 2
!
ephone-dn 34 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI3"
huntstop channel
huntstop
preference 3
!
ephone-dn 35
number 5001
name "Dial Out Only"
description "CUC1-Dialout1"
```

In this example, there are four ephone-dns configured to provide four voice messaging ports. Three of the ephone-dns are configured with the same extension number to provide ports dedicated for leaving and retrieving voice messages. These three ephone-dns are also configured with two channels each (the second channel is reserved for supervised transfers). The fourth ephone-dn is provided for use as a dial-out port. The first three ephone-dns are configured with the same extension number (4001), using preferences 1, 2, and 3 to create a hunt group. If the first port is busy, the call goes to the second port, and so on. Port 4 is configured with the extension number 5001 and is used to dial out by Unity Connection (for example, to set MWIs). Separate ports are required for answering calls and dialing out in order to prevent call-collision problems

between incoming calls placed by Cisco Unified CM Express to Unity Connection, and outgoing calls that Unity Connection places in the opposite direction.

The following is an example of the configuration with a Unity Connection cluster configured:

```
ephone-dn 32 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI1"
huntstop channel
no huntstop
preference 4
!
ephone-dn 33 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI2"
huntstop channel
no huntstop
preference 5
!
ephone-dn 34 dual-line
number 4001
name "Voice Messaging System"
description "CUC1-VI3"
huntstop channel
huntstop
preference 6
!
ephone-dn 35 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI1"
huntstop channel
no huntstop
preference 1
!
ephone-dn 36 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI2"
huntstop channel
no huntstop
preference 2
!
ephone-dn 37 dual-line
number 4001
name "Voice Messaging System"
description "CUC2-VI3"
huntstop channel
no huntstop
preference 3
!
ephone-dn 38
number 5001
name "Dial Out Only"
description "CUC1-Dialout1"
!
ephone-dn 39
number 5001
name "Dial Out Only"
description "CUC2-Dialout1"
```

In this example, there are two sets of ephone-dns:

- Four ephone-dns are configured for the publisher server in the Unity Connection cluster (CUC1-VI1 through CUC1\_VI3, and CUC1-Dialout1).
- Four ephone-dns are configured for the subscriber server in the Unity Connection cluster (CUC2-VI1 through CUC2-VI3, and CUC2-Dialout1).

The hunt group routes calls first to the subscriber server in the Unity Connection cluster. When all the answering ports on the subscriber server are busy, the hunt group routes calls to the publisher server. Only the last answering ephone-dn for the publisher server has enabled huntstop so that the hunt group searches through the answering ephone-dns on all Unity Connection servers. The ephone-dns that are used to dial out are not included in the hunt group.

## Associating the Voice Messaging Port (Multiple Cisco Unified CM Express Routers)

To associate the actual voice messaging port (vm-device-id) to the phone number, associate the Cisco IP phone with the voice messaging port.

The vm-device-id name uses the following format:

<Unity Connection device name prefix><Port number>

The vm-device-id name must match the Unity Connection voice messaging port name you use to identify the port in Cisco Unity Connection Administration when you create the integration:

- The Unity Connection device name prefix part (for example, CUC1-VI) must match the **Device Name Prefix** field on the Telephony Integrations > Port Group page.
- The port number part (for example, “1”) must match the number part of the Unity Connection voice messaging port name used to identify the port on the Telephony Integrations > Port page.

## Associating a Voicemail Device with Cisco Unified CM Express Router

### Procedure

---

**Step 1** Go into the ephone configuration mode and register the Cisco IP phones by entering the following command:

**ephone <DN tag>**

**Step 2** Define the voice messaging port name, by entering the following command:

**vm-device-id <Cisco Unity Connection device name prefix><Port number>**

For example, if the Cisco Unity Connection device name prefix is CUC1-VI, enter CUC1-VI1 for the first port, CUC1-VI2 for the second port, and so on.

**Caution** The vm-device-id name used by Cisco Unified CM Express must be the same as the voice messaging port name used by Unity Connection. Otherwise, the integration do not work.

**Step 3** Assign buttons to the Cisco IP phone directory numbers created in the [Configuring the Router for Unity Connection \(Multiple Cisco Unified CM Express Routers\)](#) by entering the following command:

**button <Button number>:<DN tag>**

For example, you can use the values 1:1, 2:4, or 3:14. In this example, button 1 corresponds to directory number 1 (ephone-dn 1), button 2 corresponds to directory number 4, and button 3 corresponds to directory number 14. The buttons correspond to the phone lines on the Cisco IP phone.

**Step 4** Repeat [Step 1](#) through [Step 3](#) for all remaining voice messaging port names.

**Note** The number of voice messaging port names configured with the `vm-device-id` command must be the same as the number of Cisco IP phones registered by the ephone configuration mode.

**Step 5** To exit the ephone configuration mode, enter the following command:

**exit**

---

## Example

Following is an example of the configuration without a Unity Connection cluster. In this example, the `vm-device-id` command is used within the ephone configuration in place of the `mac-address` parameter that is used for configuring a regular Cisco IP phone.

```
ephone 5
vm-device-id CUC1-VI1
button 1:32
!
ephone 6
vm-device-id CUC1-VI2
button 1:33
!
ephone 7
vm-device-id CUC1-VI3
button 1:34
!
ephone 8
vm-device-id CUC1-VI4
button 1:35
```

The following is an example of the configuration with a Unity Connection cluster:

```
ephone 5
vm-device-id CUC1-VI1
button 1:32
!
ephone 6
vm-device-id CUC1-VI2
button 1:33
!
ephone 7
vm-device-id CUC1-VI3
button 1:34
!
ephone 8
vm-device-id CUC1-VI4
button 1:38
!
ephone 9
vm-device-id CUC2-VI1
button 1:35
!
ephone 10
vm-device-id CUC2-VI2
button 1:36
!
ephone 11
vm-device-id CUC2-VI3
button 1:37
!
ephone 12
```



vm-device-id CUC2-VI4  
button 1:39

## Configuring the SIP MWI Server (Multiple Cisco Unified CM Express Routers)

### Procedure

---

**Step 1** Go into the SIP user-agent configuration mode by entering the following command:

**sip-ua**

**Step 2** Configure the IP address (or DNS name) and port for the SIP MWI server by entering the following command:

**mwi-server {ipv4:<MWI server IP address> | dns:<MWI server host-name>} [expires <Seconds>] [port <Port number>] [transport {tcp | udp}] [unsolicited]**

The SIP MWI server must be in the same LAN as Unity Connection. This IP address is used in conjunction with the “mwi sip” command in ephone-dn configuration mode to subscribe individual ephone-dn extension numbers to the MWI server notification list. The SIP MWI client runs TCP by default.

This command uses the following keywords:

- **ipv4:**—Sets the IP address of the SIP MWI server.
- **dns:**—Sets the DNS name of the SIP MWI server.
- **expires**—(optional) Subscription expiration time, in seconds. The range is 1 to 999999. The default is 3600.
- **transport tcp**—The default setting.
- **transport udp**—Allows you to integrate with the SIP MWI client.
- **port**—Used to specify the TCP port for the SIP MWI server. The default SIP port number is 5060.
- **unsolicited**—Allows sending SIP NOTIFY for MWIs without the need to send a SUBSCRIBE from the Cisco Unified CM Express router.

**Step 3** To exit the SIP user-agent configuration mode, enter the following command:

**exit**

**Step 4** Go into the telephony-service configuration mode by entering the following command:

**telephony-service**

**Step 5** If you want to keep the default registration with an extension number, continue to [Step 3](#). If you want to register with an E.164 10-digit number, enter the following command:

**mwi reg-e164**

**Step 6** To exit the telephony-service configuration mode, enter the following command:

**exit**

**Step 7** Continue to the next procedure.

---

## Configuring MWIs for Each Directory Number (Multiple Cisco Unified CM Express Routers)

### Procedure

---

**Step 1** Go into the ephone-dn configuration mode and configure the directory numbers for the Cisco IP phone lines by entering the following command:

**ephone-dn <DN tag>**

**Step 2** Configure a valid directory number for the Cisco IP phone that receives the MWI notification by entering the following command:

**number <Directory number>**

**Step 3** Configure the device name of MWI for the directory number that receives MWI notification by entering the following command:

**name MWI**

**Step 4** Subscribe the extension in a Cisco Unified CM Express to receive MWIs from a SIP MWI server by entering the following command:

**mwi sip**

This command integrates the Cisco Unified CM Express with the MWI service based on SIP protocol.

**Note** The “mwi sip-server” command under telephony-service configuration mode or the “mwi-server” command under SIP user-agent configuration mode must be set before enabling the “mwi sip” command in ephone configuration mode.

**Step 5** To exit the ephone-dn configuration mode, enter the following command:

**exit**

---

## Configuring a Directory Number for MWI Notification (Multiple Cisco Unified CM Express Routers)

MWI configuration on the Cisco Unified CM Express is performed by dedicating Cisco IP phone directory numbers (ephone-DNs) to process MWI status notification calls originating from Unity Connection. You must allocate a minimum of one MWI processing ephone-dn for each MWI ephone-dnvoice messaging port. The MWI processing ephone-dn extensions are configured to match the MWI extensions configured on Unity Connection.

### Procedure

---

**Step 1** Go into the ephone-dn configuration mode and configure the directory numbers for the Cisco IP phone lines by entering the following command:

**ephone-dn <DN tag>**

**Step 2** Configure two valid directory numbers for the Cisco IP phone to be used for MWIs—the first number turns MWIs on, and the second number turns MWIs off—by entering the following command:

**number <MWI on number> secondary <MWI off number>**

**Note** The MWI on and off numbers must match the settings of the **MWI On Extension** and **MWI Off Extension** fields you enter in Cisco Unity Connection Administration when you create the integration on Unity Connection.

**Step 3** Configure these two directory numbers to be used for setting MWIs by entering the following command:

**mwi on-off**

**Step 4** To exit the ephone-dn configuration mode, enter the following command:

**exit**

---

### Example

Following is an example of the configuration.

```
ephone-dn 32
number 8000 secondary 8001
mwi on-off
```

In this example, Unity Connection calls extensions 8000 and 8001 to turn MWIs on and off. The DN triggers an MWI ON event when 8000 is called, and an MWI OFF event when 8001 is called.

### Configuring MWI Relay (Multiple Cisco Unified CM Express Routers)

MWI relay is required when Unity Connection is integrated with multiple Cisco Unified CM Express routers. The Cisco Unified CM Express routers use the SIP subscriber and notifier mechanism for MWI relay. The Cisco Unified CM Express router that is the SIP MWI relay server acts as the SIP notifier. The other Cisco Unified CM Express routers (the SIP MWI clients) act as the SIP subscribers.

### Procedure

---

**Step 1** Go into the telephony-service configuration mode by entering the following command:

```
telephony-service
```

**Step 2** Enable the Cisco Unified CM Express router to relay MWI information to Cisco IP phones on other Cisco Unified CM Express routers by entering the following command:

```
mwi relay
```

**Step 3** To exit the telephony-service configuration mode, enter the following command:

```
exit
```

**Step 4** Go into the SIP user-agent configuration mode by entering the following command:

```
sip-ua
```

**Step 5** Configure the IP address (or DNS name) and port for the SIP MWI server by entering the following command:

```
mwi-server {ipv4:<MWI server IP address> | dns:<MWI server host-name>} [expires <Seconds>] [port <Port number>] [transport {tcp | udp}] [unsolicited]
```

The SIP MWI server must be in the same LAN as Unity Connection. This IP address is used in conjunction with the “mwi sip” command in ephone-dn configuration mode to subscribe individual ephone-dn extension numbers to the MWI server notification list. The SIP MWI client runs TCP by default.

This command uses the following keywords:

- **ipv4:**—Sets the IP address of the SIP MWI server.
- **dns:**—Sets the DNS name of the SIP MWI server.
- **expires**—(optional) Subscription expiration time, in seconds. The range is 1 to 999999. The default is 3600.
- **transport tcp**—The default setting.

- **transport udp**—Allows you to integrate with the SIP MWI client.
- **port**—Used to specify the TCP port for the SIP MWI server. The default SIP port number is 5060.
- **unsolicited**—Allows sending SIP NOTIFY for MWIs without the need to send a SUBSCRIBE from the Cisco Unified CM Express router.

**Step 6** To exit the SIP user-agent configuration mode, enter the following command:  
**exit**

**Step 7** Go into the telephony-service configuration mode by entering the following command:  
**telephony-service**

**Step 8** If you want to keep the default registration with an extension number, continue to [Step 9](#). If you want to register with an E.164 10-digit number, enter the following command:  
**mwi reg-e164**

**Step 9** To exit the telephony-service configuration mode, enter the following command:  
**exit**

### Enabling DTMF Relay (Multiple Cisco Unified CM Express Routers)

In certain situations, DTMF digits are not recognized when processed through VoIP dial-peer gate ways. To avoid this problem, certain gateways must be configured to enable DTMF relay. The DTMF relay feature is available in Cisco IOS software version 12.0(5) and later.

Cisco IOS software-based gateways that use H.245 out-of-band signaling (but not the Cisco Unified CM Express routers with which Unity Connection is integrated) must be configured to enable DTMF relay.

The Catalyst 6000 T1/PRI and FXS gateways enable DTMF relay by default and do not need additional configuration to enable this feature.

#### Procedure

**Step 1** On a VoIP dial-peer that points to a Cisco Unified CM Express router integrated with Unity Connection (the dial-peer must have a session target of the Cisco Unified CM Express router, not Unity Connection), enter the following command:  
**dtmf-relay h245-signal**

**Step 2** Create a destination pattern that matches the Cisco Unified CM Express voicemail port numbers. For example, if the system has voicemail ports 1001 through 1016, enter the dial-peer destination pattern **10xx**.

**Step 3** Repeat [Step 1](#) and [Step 2](#) for all remaining VoIP dial-peers that point to Cisco Unified CM Express routers integrated with Cisco Unity Connection.

## Creating a New Integration with Cisco Unified CM Express

After ensuring that Cisco Unified Communications Manager Express and Unity Connection are ready for the integration, do the following procedure to set up the integration and to enter the port settings.

## Creating an Integration

### Procedure

- Step 1** In Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Phone System**.
- Step 2** On the Search Phone Systems page, under **Display Name**, select the name of the default phone system.
- Step 3** On the Phone System Basics page, in the **Phone System Name** field, enter the descriptive name that you want for the phone system.
- Step 4** If you want to use this phone system as the default for TRaP connections so that administrators and users without voicemail boxes can record and playback through the phone in Unity Connection web applications, check the **Default TRAP Switch** check box. If you want to use another phone system as the default for TRaP connections, uncheck this check box.
- Step 5** Select **Save**.
- Step 6** On the Phone System Basics page, in the **Related Links** drop-down box, select **Add Port Group** and select **Go**.
- Step 7** On the New Port Group page, enter the following settings to configure the answering port group and select **Save**.

**Table 2: Settings for the New Port Group Page (Answering Port Group)**

Field	Setting
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Create From	Select <b>Port Group Template</b> and select <b>SCCP</b> in the drop-down box.
Display Name	Enter a descriptive name for the port group. You can accept the default name or enter the name that you want. For example, enter “CUC1-VI.”
Device Name Prefix	Enter the prefix that Cisco Unified CM Express uses in the vm-device-id name before the port number. This prefix must match the prefix used for the answering ephone-dns by Cisco Unified CM Express.  For a Unity Connection cluster, this prefix must match the prefix used for the answering ephone-dns that connect to the publisher server.
MWI On Extension	(This field is not used by the answering port group.) Enter the MWI on directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
MWI Off Extension	(This field is not used by the answering port group.) Enter the MWI off directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
IPv4 Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
IPv6 Address or Host Name	Do not enter a value in this field. IPv6 is not supported for Cisco Unified CM Express integrations.
IP Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.

Field	Setting
Port	Enter the TCP port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.
TLS Port	Enter the TLS port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.

**Step 8** On the Port Group Basics page, on the Edit menu, select **Servers**.

**Step 9** On the Edit Servers page, under Cisco Unified Communications Manager Servers, in the **Server Type** column, select **Cisco Unified Communications Manager Express** and select **Save**.

**Step 10** On the **Edit** menu, select **Port Group Basics**.

**Step 11** On the Port Group Basics page, in the **Related Links** drop-down box, select **Add Ports** and select **Go**.

**Step 12** On the New Port page, enter the following settings and select **Save**.

**Table 3: Settings for the New Port Page (Answering Ports)**

Field	Setting
Enabled	Check this check box.
Number of Ports	Enter the number of answering voice messaging ports that you want to create in this port group.  For a Unity Connection cluster, enter half of the total number of answering voice messaging ports that are used by all servers in the cluster. Later, you create a second answering port group for the remaining answering voice messaging ports.
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Port Group	Select the name of the port group that you added in <a href="#">Step 7</a> .
Server	Select the name of the Unity Connection server.  For a Unity Connection cluster, select the name of the publisher server in the cluster.
Security Mode	Select <b>Non-secure</b> .  (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 13** On the Search Ports page, select the display name of the first voice messaging port that you created for this answering port group.

**Note** By default, the display names for the voice messaging ports are composed of the port group display name followed by incrementing numbers.

**Step 14** On the Port Basics page, set the voice messaging port settings as applicable. The fields in the following table are the ones that you can change.

**Table 4: Settings for the Answering Voice Messaging Ports**

<b>Field</b>	<b>Considerations</b>
Enabled	<p>Check this check box to enable the port. The port is enabled during normal operation.</p> <p>Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.</p>
Server	<p>Select the name of the Unity Connection server.</p> <p>For a Unity Connection cluster, select the name of the publisher server in the cluster.</p>
Answer Calls	<p>Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.</p>
Perform Message Notification	<p>Uncheck this check box.</p> <p>Check this check box to designate the port for notifying users of messages. <b>Assign Perform Message Notification</b> to the least busy ports.</p>
Send MWI Requests	<p>Uncheck this check box.</p> <p>Check this check box to designate the port for turning MWIs on and off. Assign Send MWI Requests to the least busy ports.</p>
Allow TRAP Connections	<p>Uncheck this check box.</p> <p>Check this check box so that users can use the port for recording and playback through the phone in Unity Connection web applications. Assign <b>Allow TRAP Connections</b> to the least busy ports.</p>
Outgoing Hunt Order	<p>(This field is not used by the answering port group.) Enter the priority order in which Unity Connection uses the ports when dialing out (for example, if the <b>Perform Message Notification</b>, <b>Send MWI Requests</b>, or <b>Allow TRAP Connections</b> check box is checked). The highest numbers are used first. However, when multiple ports have the same <b>Outgoing Hunt Order</b> number, Unity Connection uses the port that has been idle the longest.</p>
Security Mode	<p>Select <b>Non-secure</b>.</p> <p><b>Note</b> (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)</p>

**Step 15** Select **Save**.

**Step 16** Select **Next**.

**Step 17** Repeat [Step 14](#) through [Step 16](#) for all remaining answering voice messaging ports for the answering port group.

**Step 18** Expand **Telephony Integration**, then select **Port Group**.

**Step 19** On the Search Port Groups page, select **Add New** to add a dial-out port group for the second Unity Connection server in the cluster.

**Step 20** On the New Port Group page, enter the following settings to configure the dial-out port group and select **Save**.

**Table 5: Settings for the New Port Group Page (Dial-out Port Group)**

Field	Setting
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Create From	Select <b>Port Group Template</b> and select <b>SCCP</b> in the drop-down box.
Display Name	Enter a descriptive name for the port group. You can accept the default name or enter the name that you want. For example, enter “CUC1-Dialout.”
Device Name Prefix	Enter the prefix that Cisco Unified CM Express uses in the vm-device-id name before the port number. This prefix must match the prefix used for the dial-out ephone-dns by Cisco Unified CM Express.  For a Unity Connection cluster, this prefix must match the prefix used for the dial-out ephone-dns that connects to the publisher server.
MWI On Extension	Enter the MWI on directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
MWI Off Extension	Enter the MWI off directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
IPv4 Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
IPv6 Address or Host Name	Do not enter a value in this field. IPv6 is not supported for Cisco Unified CM Express integrations.
IP Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
Port	Enter the TCP port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.
TLS Port	Enter the TLS port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.

- Step 21** On the Port Group Basics page, on the **Edit** menu, select **Servers**.
- Step 22** On the Edit Servers page, under Cisco Unified Communications Manager Servers, in the **Server Type** column, select **Cisco Unified Communications Manager Express** and select **Save**.
- Step 23** On the Edit menu, select **Port Group Basics**.
- Step 24** On the Port Group Basics page, in the **Related Links** drop-down box, select **Add Ports** and select **Go**.
- Step 25** On the New Port page, enter the following settings and select **Save**.

**Table 6: Settings for the New Port Page (Dial-out Ports)**

Field	Setting
Enabled	Check this check box.



Field	Setting
Number of Ports	Enter the number of dial-out voice messaging ports that you want to create in this port group.  For a Unity Connection cluster, enter half of the total number of dial-out voice messaging ports that are used by all servers in the cluster. Later, you create a second dial-out port group for the remaining dial-out voice messaging ports.
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Port Group	Select the name of the port group that you added in <a href="#">Step 20</a> .
Server	Select the name of the Unity Connection server.  For a Unity Connection cluster, select the name of the publisher server in the cluster.
Security Mode	Select Non-secure.  (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 26** On the Search Ports page, select the display name of the first voice messaging port that you created for this dial-out port group.

**Note** By default, the display names for the voice messaging ports are composed of the port group display name followed by incrementing numbers.

**Step 27** On the Port Basics page, set the voice messaging port settings as applicable. The fields in the following table are the ones that you can change.

**Table 7: Table 7 Settings for the Dial-out Voice Messaging Ports**

Field	Considerations
Enabled	Check this check box to enable the port. The port is enabled during normal operation.  Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.
Server	Select the name of the Unity Connection server.  For a Unity Connection cluster, select the name of the publisher server in the cluster.
Answer Calls	Uncheck this check box.  Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.
Perform Message Notification	Check this check box to designate the port for notifying users of messages. Assign <b>Perform Message Notification</b> to the least busy ports.
Send MWI Requests	Check this check box to designate the port for turning MWIs on and off. Assign <b>Send MWI Requests</b> to the least busy ports.

Field	Considerations
Allow TRAP Connections	Check this check box so that users can use the port for recording and playback through the phone in Unity Connection web applications. Assign <b>Allow TRAP Connections</b> to the least busy ports.
Outgoing Hunt Order	Enter the priority order in which Unity Connection uses the ports when dialing out (for example, if the <b>Perform Message Notification, Send MWI Requests</b> , or the <b>Allow TRAP Connections</b> check box is checked). The highest numbers are used first. However, when multiple ports have the same <b>Outgoing Hunt Order</b> number, Unity Connection uses the port that has been idle the longest.
Security Mode	Select <b>Non-secure</b> .  <b>Note</b> (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 28** Select **Save**.

**Step 29** Select **Next**.

**Step 30** Repeat [Step 27](#) through [Step 30](#) for all remaining dial-out voice messaging ports in the dial-out port group.

**Step 31** For Unity Connection without a cluster, skip to [Step 57](#). For a Unity Connection cluster, in Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Port Group**.

**Step 32** On the Search Port Groups page, select **Add New**.

**Step 33** On the New Port Group page, enter the following settings to configure the answering port group for the subscriber server and select **Save**.

**Table 8: Table 8 Settings for the New Port Group Page (Answering Port Group)**

Field	Setting
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Create From	Select <b>Port Group Template</b> and select <b>SCCP</b> in the drop-down box.
Display Name	Enter a descriptive name for the port group. You can accept the default name or enter the name that you want. For example, enter “CUC2-VI.”
Device Name Prefix	Enter the prefix that Cisco Unified CM Express uses in the vm-device-id name before the port number. This prefix must match the prefix used for the answering ephone-dns for the subscriber server by Cisco Unified CM Express.
MWI On Extension	(This field is not used by the answering port group.) Enter the MWI on directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
MWI Off Extension	(This field is not used by the answering port group.) Enter the MWI off directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
IPv4 Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.

Field	Setting
IPv6 Address or Host Name	Do not enter a value in this field. IPv6 is not supported for Cisco Unified CM Express integrations.
IP Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
Port	Enter the TCP port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.
TLS Port	Enter the TLS port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.

**Step 34** On the Port Group Basics page, on the **Edit** menu, select **Servers**.

**Step 35** On the Edit Servers page, under Cisco Unified Communications Manager Servers, in the **Server Type** column, select **Cisco Unified Communications Manager Express** and select **Save**.

**Step 36** On the **Edit** menu, select **Port Group Basics**.

**Step 37** On the Port Group Basics page, in the **Related Links** drop-down box, select **Add Ports** and select **Go**.

**Step 38** On the New Port page, enter the following settings and select **Save**.

**Table 9: Table 9 Settings for the New Port Page (Answering Ports)**

Field	Setting
Enabled	Check this check box.
Number of Ports	Enter the answering voice messaging ports that are used by the subscriber server in the Unity Connection cluster.
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Port Group	Select the name of the port group that you added in <a href="#">Step 33</a> .
Server	Select the name of the subscriber server in the Unity Connection cluster.
Security Mode	Select <b>Non-secure</b> .  (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 39** On the Search Ports page, select the display name of the first voice messaging port that you created for this answering port group.

**Note** By default, the display names for the voice messaging ports are composed of the port group display name followed by incrementing numbers.

**Step 40** On the Port Basics page, set the voice messaging port settings as applicable. The fields in the following table are the ones that you can change.

**Table 10: Table 10 Settings for the Answering Voice Messaging Ports**

<b>Field</b>	<b>Considerations</b>
Enabled	Check this check box to enable the port. The port is enabled during normal operation. Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.
Server	Select the name of the subscriber server in the Unity Connection cluster.
Answer Calls	Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.
Perform Message Notification	Uncheck this check box. Check this check box to designate the port for notifying users of messages. Assign <b>Perform Message Notification</b> to the least busy ports.
Send MWI Requests	Uncheck this check box. Check this check box to designate the port for turning MWIs on and off. Assign <b>Send MWI Requests</b> to the least busy ports.
Allow TRAP Connections	Uncheck this check box. Check this check box so that users can use the port for recording and playback through the phone in Unity Connection web applications. Assign <b>Allow TRAP Connections</b> to the least busy ports.
Outgoing Hunt Order	(This field is not used by the answering port group.) Enter the priority order in which Unity Connection uses the ports when dialing out (for example, if the <b>Perform Message Notification</b> , <b>Send MWI Requests</b> , or <b>Allow TRAP Connections</b> check box is checked). The highest numbers are used first. However, when multiple ports have the same <b>Outgoing Hunt Order</b> number, Unity Connection uses the port that has been idle the longest.
Security Mode	Select <b>Non-secure</b> .  <b>Note</b> (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

- Step 41** Select **Save**.
- Step 42** Select **Next**.
- Step 43** Repeat [Step 40](#) through [Step 42](#) for all remaining answering voice messaging ports for the answering port group.
- Step 44** Expand **Telephony Integration**, then select **Port Group**.
- Step 45** On the Search Port Groups page, select **Add New** to add a dial-out port group for the subscriber server in the Unity Connection cluster.
- Step 46** On the New Port Group page, enter the following settings to configure the dial-out port group and select **Save**.

**Table 11: Table 11 Settings for the New Port Group Page (Dial-out Port Group)**

Field	Setting
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .
Create From	Select <b>Port Group Template</b> and select <b>SCCP</b> in the drop-down box.
Display Name	Enter a descriptive name for the port group. You can accept the default name or enter the name that you want. For example, enter “CUC2-Dialout.”
Device Name Prefix	Enter the prefix that Cisco Unified CM Express uses in the vm-device-id name before the port number. This prefix must match the prefix used for the dial-out ephone-dns for the subscriber server by Cisco Unified CM Express.
MWI On Extension	Enter the MWI on directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
MWI Off Extension	Enter the MWI off directory number that you specified in the ephone-dn configuration mode of the Cisco Unified CM Express router.
IPv4 Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
IPv6 Address or Host Name	Do not enter a value in this field. IPv6 is not supported for Cisco Unified CM Express integrations.
IP Address or Host Name	Enter the IP address (or host name) of the Cisco Unified CM Express router that you are integrating with Unity Connection.
Port	Enter the TCP port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.
TLS Port	Enter the TLS port of the Cisco Unified CM Express router that you are integrating with Unity Connection. We recommend that you use the default setting.

- Step 47** On the Port Group Basics page, on the **Edit** menu, select **Servers**.
- Step 48** On the Edit Servers page, under Cisco Unified Communications Manager Servers, in the **Server Type** column, select **Cisco Unified Communications Manager Express** and select **Save**.
- Step 49** On the **Edit** menu, select **Port Group Basics**.
- Step 50** On the Port Group Basics page, in the **Related Links** drop-down box, select **Add Ports** and select **Go**.
- Step 51** On the New Port page, enter the following settings and select **Save**.

**Table 12: Table 12 Settings for the New Port Page (Dial-out Ports)**

Field	Setting
Enabled	Check this check box.
Number of Ports	Enter the dial-out voice messaging ports used by the subscriber server in the Unity Connection cluster.
Phone System	Select the name of the phone system that you entered in <a href="#">Step 3</a> .

Field	Setting
Port Group	Select the name of the port group that you added in <a href="#">Step 46</a> .
Server	Select the name of the subscriber server in the Unity Connection cluster.
Security Mode	Select <b>Non-secure</b> .  (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 52** On the Search Ports page, select the display name of the first voice messaging port that you created for this dial-out port group.

**Note** By default, the display names for the voice messaging ports are composed of the port group display name followed by incrementing numbers.

**Step 53** On the Port Basics page, set the voice messaging port settings as applicable. The fields in the following table are the ones that you can change.

**Table 13: Table 13 Settings for the Dial-out Voice Messaging Ports**

Field	Considerations
Enabled	Check this check box to enable the port. The port is enabled during normal operation.  Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.
Server	Select the name of the subscriber server in the Unity Connection cluster.
Answer Calls	Uncheck this check box.  Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.
Perform Message Notification	Check this check box to designate the port for notifying users of messages. Assign <b>Perform Message Notification</b> to the least busy ports.
Send MWI Requests	Check this check box to designate the port for turning MWIs on and off. Assign <b>Send MWI Requests</b> to the least busy ports.
Allow TRAP Connections	Check this check box so that users can use the port for recording and playback through the phone in Unity Connection web applications. Assign <b>Allow TRAP Connections</b> to the least busy ports.
Outgoing Hunt Order	Enter the priority order in which Unity Connection uses the ports when dialing out (for example, if the <b>Perform Message Notification</b> , <b>Send MWI Requests</b> , or <b>Allow TRAP Connections</b> check box is checked). The highest numbers are used first. However, when multiple ports have the same <b>Outgoing Hunt Order</b> number, Unity Connection uses the port that has been idle the longest.

Field	Considerations
Security Mode	Select <b>Non-secure</b> .  <b>Note</b> (Cisco Unified Communications Manager authentication and encryption are not available for Cisco Unified CM Express.)

**Step 54** Select **Save**.

**Step 55** Select **Next**.

**Step 56** Repeat [Step 53](#) through [Step 55](#) for all remaining dial-out voice messaging ports in the dial-out port group.

**Step 57** If another phone system integration exists, in Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Trunk**. Otherwise, skip to [Step 61](#).

**Step 58** On the Search Phone System Trunks page, on the **Phone System Trunk** menu, select **New Phone System Trunk**.

**Step 59** On the New Phone System Trunk page, enter the following settings for the phone system trunk and select **Save**.

**Table 14: Table 14 Settings for the Phone System Trunk**

Field	Setting
From Phone System	Select the display name of the phone system that you are creating a trunk for.
To Phone System	Select the display name of the previously existing phone system that the trunk connects to.
Trunk Access Code	Enter the extra digits that Unity Connection must dial to transfer calls through the gateway to extensions on the previously existing phone system.

**Step 60** Repeat [Step 58](#) and [Step 59](#) for all remaining phone system trunks that you want to create.

**Step 61** In the Related Links drop-down list, select **Check Telephony Configuration** and select **Go** to confirm the phone system integration settings.

If the test is not successful, the **Task Execution Results** displays one or more messages with troubleshooting steps. After correcting the problems, test the connection again.

**Step 62** In the Task Execution Results window, select **Close**.

## Testing the Integration

To test whether Unity Connection and the phone system are integrated correctly, do the following procedures in the order listed.

If any of the steps indicate a failure, see the following documentation as applicable:

- The “Installing Cisco Unity Connection” chapter of the *Install, Upgrade and Maintenance Guide for Cisco Unity Connection, Release 14*, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/install\\_upgrade/guide/b\\_14cuciumg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/install_upgrade/guide/b_14cuciumg.html).
- *Troubleshooting Guide for Cisco Unity Connection, Release 14* at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/troubleshooting/guide/b\\_14cuctsg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/troubleshooting/guide/b_14cuctsg.html).

- The setup information earlier in this guide.

## Setting Up the Test Configuration

### Procedure

- 
- Step 1** Set up two test extensions (Phone 1 and Phone 2) on the same phone system that Unity Connection is connected to.
- Step 2** Set Phone 1 to forward calls to the Unity Connection pilot number when calls are not answered.
- Caution** The phone system must forward calls to the Unity Connection pilot number in no fewer than four rings. Otherwise, the test may fail.
- Step 3** In Cisco Unity Connection Administration, expand **Users**, then select **Users**.
- Step 4** On the Search Users page, select the display name of a user to use for testing. The extension for this user must be the extension for Phone 1.
- Step 5** On the Edit User Basics page, uncheck the **Set for Self-enrollment at Next Login** check box.
- Step 6** In the **Voice Name** field, record a recorded name for the test user.
- Step 7** Select **Save**.
- Step 8** On the **Edit** menu, select **Message Waiting Indicators**.
- Step 9** On the Message Waiting Indicators page, select the message waiting indicator. If no message waiting indication is in the table, select **Add New**.
- Step 10** On the Edit Message Waiting Indicator page, enter the following settings.

*Table 15: Settings for the Edit MWI Page*

Field	Setting
Enabled	Check this check box to enable MWIs for the test user.
Display Name	Accept the default or enter a different name.
Inherit User's Extension	Check this check box to enable MWIs on Phone 1.

- Step 11** Select **Save**.
- Step 12** On the **Edit** menu, select **Transfer Rules**.
- Step 13** On the Transfer Rules page, select the active transfer rule.
- Step 14** On the Edit Transfer Rule page, under **Transfer Action**, select **Extension** and enter the extension of Phone 1.
- Step 15** In the **Transfer Type** field, select **Release to Switch**.
- Step 16** Select **Save**.
- Step 17** Minimize the Cisco Unity Connection Administration window.  
Do not close the Cisco Unity Connection Administration window because you use it again in a later procedure.
- Step 18** Sign in to the Real-Time Monitoring Tool (RTMT).
- Step 19** On the **Unity Connection** menu, select **Port Monitor**. The Port Monitor tool appears in the right pane.
- Step 20** In the right pane, select **Start Polling**. The Port Monitor displays which port is handling the calls that you make.
-



## Testing an External Call with Release Transfer

### Procedure

---

- Step 1** From Phone 2, enter the access code necessary to get an outside line, then enter the number outside callers use to dial directly to Unity Connection.
  - Step 2** In the Port Monitor, note which port handles this call.
  - Step 3** When you hear the opening greeting, enter the extension for Phone 1. Hearing the opening greeting means that the port is configured correctly.
  - Step 4** Confirm that Phone 1 rings and that you hear a ring back tone on Phone 2. Hearing a ring back tone means that Unity Connection correctly released the call and transferred it to Phone 1.
  - Step 5** Leaving Phone 1 unanswered, confirm that the state of the port handling the call changes to “Idle.” This state means that release transfer is successful.
  - Step 6** Confirm that, after the number of rings that the phone system is set to wait, the call is forwarded to Unity Connection and that you hear the greeting for the test user. Hearing the greeting means that the phone system forwarded the unanswered call and the call-forward information to Unity Connection, which correctly interpreted the information.
  - Step 7** On the Port Monitor, note which port handles this call.
  - Step 8** Leave a message for the test user and hang up Phone 2.
  - Step 9** In the Port Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
  - Step 10** Confirm that the MWI on Phone 1 is activated. The activated MWI means that the phone system and Unity Connection are successfully integrated for turning on MWIs.
- 

## Testing Listening to Messages

### Procedure

---

- Step 1** From Phone 1, enter the internal pilot number for Unity Connection.
  - Step 2** When asked for your password, enter the password for the test user. Hearing the request for your password means that the phone system sent the necessary call information to Unity Connection, which correctly interpreted the information.
  - Step 3** Confirm that you hear the recorded name for the test user (if you did not record a name for the test user, you hear the extension number for Phone 1). Hearing the recorded name means that Unity Connection correctly identified the user by the extension.
  - Step 4** Listen to the message.
  - Step 5** After listening to the message, delete the message.
  - Step 6** Confirm that the MWI on Phone 1 is deactivated. The deactivated MWI means that the phone system and Unity Connection are successfully integrated for turning off MWIs.
  - Step 7** Hang up Phone 1.
  - Step 8** On the Port Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
-

## Setting Up Supervised Transfer on Cisco Unity Connection

### Procedure

---

- Step 1** In Cisco Unity Connection Administration, on the Edit Transfer Rule page for the test user, in the **Transfer Type** field, select **Supervise Transfer**.
  - Step 2** In the **Rings to Wait For** field, enter **3**.
  - Step 3** Select **Save**.
  - Step 4** Minimize the Cisco Unity Connection Administration window.  
Do not close the Cisco Unity Connection Administration window because you use it again in a later procedure.
- 

## Testing Supervised Transfer

### Procedure

---

- Step 1** From Phone 2, enter the access code necessary to get an outside line, then enter the number outside callers use to dial directly to Unity Connection.
  - Step 2** On the Port Monitor, note which port handles this call.
  - Step 3** When you hear the opening greeting, enter the extension for Phone 1. Hearing the opening greeting means that the port is configured correctly.
  - Step 4** Confirm that Phone 1 rings and that you do not hear a ringback tone on Phone 2. Instead, you should hear the indication your phone system uses to mean that the call is on hold (for example, music).
  - Step 5** Leaving Phone 1 unanswered, confirm that the state of the port handling the call remains “Busy.” This state and hearing an indication that you are on hold mean that Unity Connection is supervising the transfer.
  - Step 6** Confirm that, after three rings, you hear the greeting for the test user. Hearing the greeting means that Unity Connection successfully recalled the supervised-transfer call.
  - Step 7** During the greeting, hang up Phone 2.
  - Step 8** On the Port Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
  - Step 9** Select **Stop Polling**.
  - Step 10** Sign out of RTMT.
- 

## Adding New User Templates for Multiple Integrations

When you create the first phone system integration, this first phone system is automatically selected in the default user template. The users that you add after creating this phone system integration is assigned to this phone system by default.

However, for each additional phone system integration that you create, you must add the applicable new user templates that assign users to the new phone system. You must add the new templates before you add new users who are assigned to the new phone system. For details on adding new user templates, or on selecting a user template when adding a new user, see the “User Templates” section

of the “User Attributes” chapter of the *System Administration Guide for Cisco Unity Connection, Release 14*, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/14/administration/guide/b\\_14cucsag.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/14/administration/guide/b_14cucsag.html).





**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA 95134-1706  
USA

**Asia Pacific Headquarters**  
CiscoSystems(USA)Pte.Ltd.  
Singapore

**Europe Headquarters**  
CiscoSystemsInternationalBV  
Amsterdam,TheNetherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).